
VDOT
Virginia Department of Transportation

METHOD A & B APPLICATION AND PRICE ADJUSTMENT CALCULATION

2020 Asphalt Seminar | Fredericksburg

Todd Rorrer
Central Office Materials

3/10/2020 Regional Seminar

Roller Pattern, Control Strips and Test Sections with Method A & B

Roller Pattern and Control Strips:

- When, Where and How

Test Sections ‘aka’ as Lots:

- When, Where and How

- For both Method A and B in the Special Provision for Density Determination and

- The 2016 R&B Specification

Roller Pattern and Control Strips

Establishes the max achievable density for the mix for and sets the Nuclear Target for QC:

- New course of each new road way
- Combination of equipment and
- Job mix formula
- Paver pass of 6 feet and greater

Key inspection points:

- RP & CS Complete within first 1000’
- Representative of the new course
- Mat temperature is critical, RP & CS completed before mat cools to 150F
- Verify that CS cores meet specification
- The RP & CS is considered a Lot

Payment for Control Strips:

Section 315.05(e)1a Control Strip is amended to replace the last paragraph with the following:

The control strip shall be considered a lot. If the control strip density conforms to the requirements specified in Table III-3, the Engineer will consider the control strip to be acceptable and the control strip density shall become the target control strip density.

TABLE III-3
Minimum Control Strip Density Requirements

Mixture Type	Min. Control Strip Density (%)[1]
SM-9.5A, 12.5A	92.5
SM-9.5D, 12.5D	92.5
SM-9.5E, 12.5E	92.5
IM-19.0A, IM-19.0D, IM-19.0E	92.2
BM-25.0A, BM-25.0D	92.2

[1]The control strip density requirement is the percentage of theoretical maximum density of the job-mix formula by SUPERPAVE mix design or as established by the Engineer based on two or more production maximum theoretical density tests.

TABLE III-4
Payment Schedule for Failing Control Strips

% TMD	% of Payment
Greater than 96.5	95
92.2/92.5[1]– 96.5	100
90.0-92.1/92.4[1]	90
88.0-89.9	80
Less than 88.0	75

[1]For SM-9.5 and SM-12.5 mixes, the minimum density value is 92.5% per Table III-3. For IM-19.0 and BM-25.0 mixes, the minimum density value is 92.2 per Table III-3.

Test section (lot):

315.05 (e) 1

The Engineer will divide the project into control strips" and "test sections" **for the purpose of defining areas represented by each series of tests**.

315.05 (e) 1 b. **Test section (lot):**

For the purposes of determining acceptance, the Engineer will consider **each day's production as a lot**….. The standard size of a lot will be 5,000 linear feet (five 1,000 foot sublots) of any pass 6 feet or greater made by the paving train for the thickness of the course.

When and where to use Method A vs Method B on Paving Schedules

TABLE III-2A
Density Acceptance Methods

Density Acceptance Method to be used	Route type	Traffic Group	Minimum roadway pavement width
Method 'A' (plugs or cores)	• All intersate & limited access primary • Primary & secondary with minimum traffic & width	X and higher (>=2,000 ADT)	20'
Method 'B' (nuclear guage)	• Primary & secondary not meeting minimum traffic & width	IX and lower (< 2,000 ADT)	n/a

Schedule: PM-7B-19 **Madison Co.**

State Project Number: PM7B-967-F19, P401

Route: 29 (R-VA US00029SB) **Milepost From:** 5.64 Rt. 733
Subdivision: **Lane:** S **PCN:** M719PMB112989 **UPC:** 112989
Traf Grp: XVII **Milepost To:** 8.41 Rt 634
From Intersection: 5.64 Miles: Oak Hill Ct; Rt. 733E/W (Madison County)
From Offset: 0MI **From X/Y Coordinates:** 38.34785, -78.28435
To Intersection: 8.41 Miles: Oak Park Rd, Washington St, Rte 634N/S (Madison Co);
To Offset: 0MI **To X/Y Coordinates:** 38.37922, -78.25285
Public Comments:

Item Code & Description	Detail	Len(mi)	Wid(ft)	Dep(in)	Gal/SqYd	Lbs/SqYd	Quantity	UOM
10700 - RUMBLE STRIP, ASPHALT	R6 @ 12" wide						25595	LF
16350 - ASPHALT CONC. TY. SM-12.5A	4' Right Shoulder 3' Left Shoulder	2.77	7	2			1251.3	TON
16350 - ASPHALT CONC. TY. SM-12.5A	Connections and Turn lanes						367	TON
16350 - ASPHALT CONC. TY. SM-12.5A		2.77	24			230	4485.18	TON

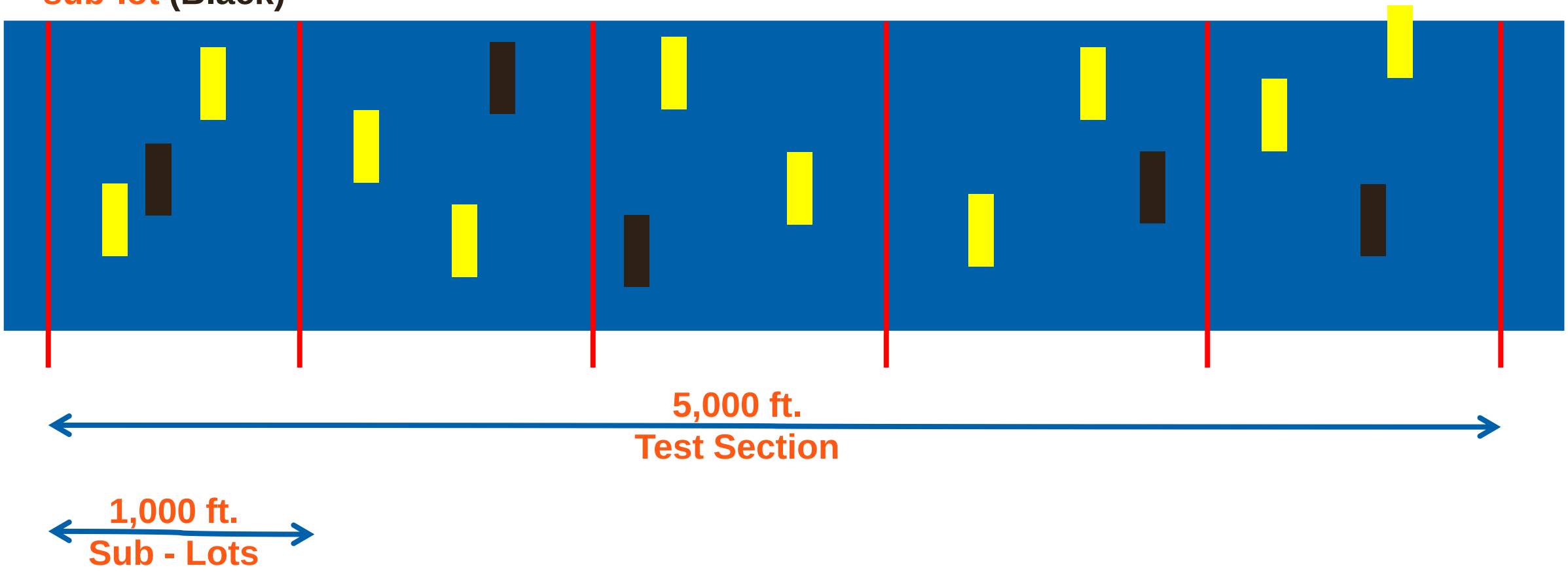
Method A Test Sections:

Each day's production is a Lot – made up of test sections and sub lots. Pay adjustments are calculated based on the materials with in the lot

Required Testing:

QC via Two Nuclear Locations (Yellow)

Acceptance via One Core Location per 1000' sub-lot (Black)

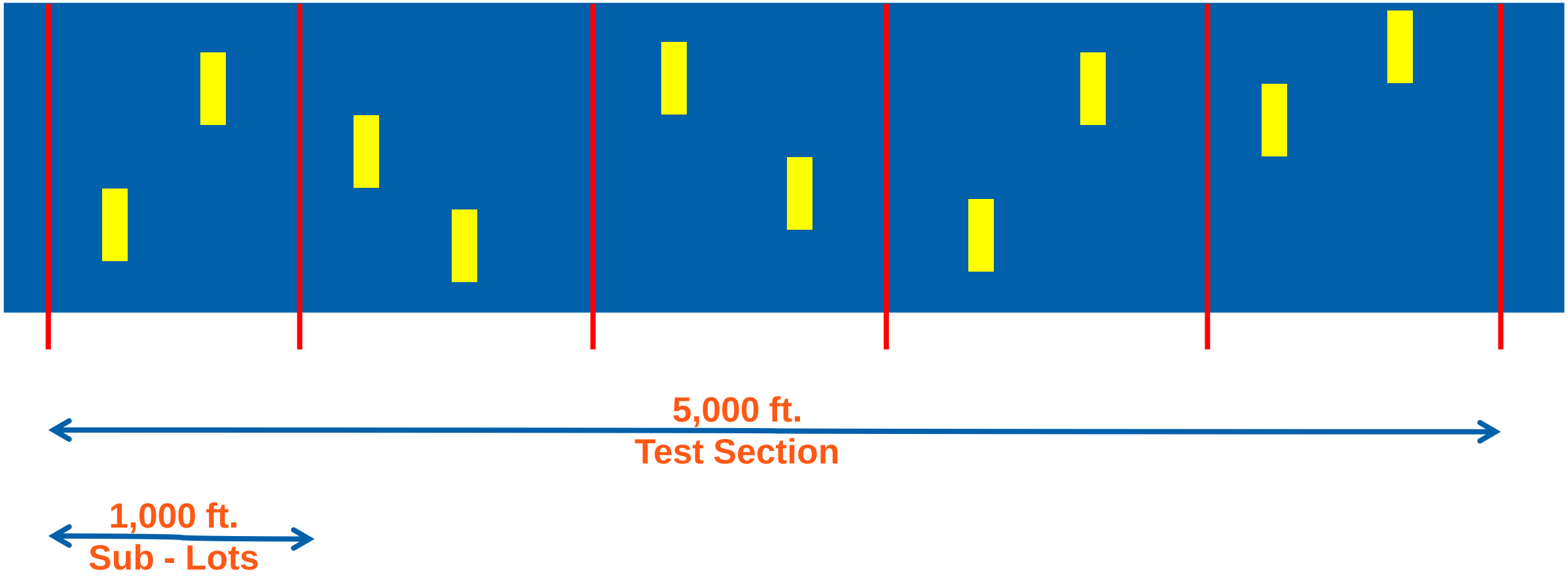


Method B Test Sections:

Same as the 2016 Road and Bridge Specification for Section 315

Required Testing (per 1000'):

Two Nuclear Locations (Yellow)



Applying price adjustments to Test Sections (Lots):

2016 Road and Bridge Section 315.05:

The tonnage of each lot will be based on the lot's width and length and the mixture application rate as designated in the Contract or as revised by the Engineer. Payment will be made in accordance with **Table III-4**.

The Special Provision for Density Determination:

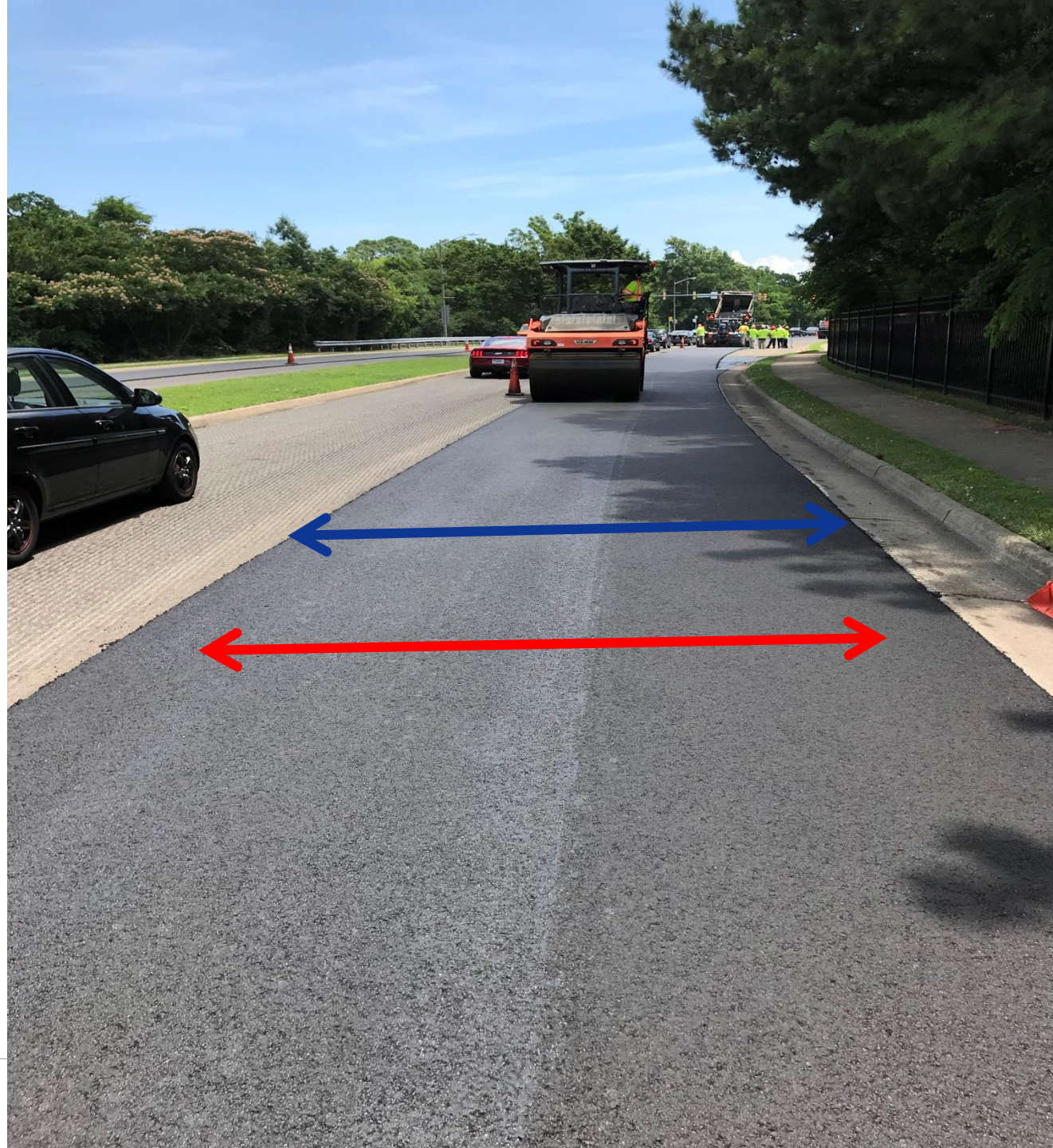
The tonnage of each lot will be based on the lot's width and length and the mixture application rate as designated in the Contract or as revised by the Engineer. Payment will be made in accordance with the requirements of **Table III-4A (or III-4B for Method B).**

Test Section Widths:

Define the width of the Lot

Defines the width of the testing area and random numbers

Tests are not conducted within 12”/18” of application width



Lot Length and Turn Lanes

The Engineer will divide the project into “control strips” and “test sections” **for the purpose of defining areas represented by each series of tests**.

The Engineer needs to determine whether these areas are part of the lot, and if so then they need to be tested, i.e. select random numbers and test locations within these lengths as well:

When paving is less than 3,000 feet, that day’s production will be combined with the previous day’s production or added to the next day’s production to create a lot as described below

Calculating Lot tonnages for Price Adjustments TL-59A

L(4936')*W(13')/9sqyd * 230lbs/sqyd/2000 = 819.92 Tons

Asphalt Concrete Density Acceptance Test Report - Method A
Acceptance by Plugs/Cores

Production Date:	4/23/19	Route & Direction:	RT 33	Lane(s):	EBL/LEFT
Project/Schedule Number:	PM7B-967-F19	County:	Albemarle	Paving Contractor:	SLWCO
Test Section (Lot) #:	5	**From** (Station, MP):	.4 W. Rt 625	**To** (Station, MP):	.75 MI. E. Rt. 638
Total paved length (ft):	4,936	**Application Width (ft):**	13	**Application Rate (lbs/sy):**	230
Calculated tonnage:	819.92	Asphalt Producer:	SLWCO	Asphalt Plant:	RUCKERSVILLE
Asphalt Mix Type:	SM-12.5 A	Job Mix ID:	7024-2019-32		

Control Strip Information:

1. Control Strip Number and Date: CS 2 4/17/19 — 2. CS Density: 148.2 lbs/ft³ — Nuclear Gauge Serial #: 64966

3. Min Longitudinal Joint Density: 140.79 lbs/ft³ (= 95% CS Density)

Acceptance Testing Results By Plugs/Cores: Daily Gmm: 2.578 — Plant Lot & Sample #(s) for Gmm testing: 2019-01 Sub 7 & 8

Core Results from the same TL-59A

3. Min Longitudinal Joint Density: 140.79 lbs/ft³ (= 95% CS Density)

Acceptance Testing Results By Plugs/Cores: Daily Gmm: 2.578 Plant Lot & Sample #(s) for Gmm testing: 2019-01 Sub 7 & 8

Sub lot	Distance (ft)	Offset (ft)	Thickness (in)	Weight in Air [A]	Weight in H2O [B]	SSD Weight [C]	Volume (C-B)	Gmb (A/(C-B))	%Gmm	Bonus Eligible	Longitudinal Joint Density	
											Left (lbs/ft³)	Right (lbs/ft³)
1	256	4	2"	902.1	535.1	902.7	367.6	2.45	**95.0%**	1	142.8	
2	1752	5	2"	1084.1	639.5	1085.1	445.6	2.43	**94.3%**	1	145.1	
3	2149	8	2"	1065.5	631.2	1066.4	435.2	2.45	**95.0%**	1	146.5	
4	3303	9	2"	932.4	548.4	933.2	384.8	2.42	**93.9%**	1	145.1	
5	4926	6	2"	1174.1	687	1175.6	488.6	2.40	**93.1%**	1	144.6	
6												
7												

Pay Factor from S315HP1 Table III-4A: 105% Averages: 2.430 94.3% **100.0%** **Percent of sub lots meeting bonus criteria**

Field Level II Technician: Susan Casady Comments: Date: 4/23/19

Inspector:

Total shipped tons from that day's paving = 976.61

VIRGINIA DEPARTMENT OF TRANSPORTATION
WEIGHPERSON'S SUMMARY

This is to certify that S.L. Williamson Company, Inc. (24) Ruckersville

Shipped the following materials on the below reference date.

Shift Start Date: 4/23/2019 6:00 AM End Date: 4/23/2019 6:00 PM

Project: PM7B-967-F19,P401 UPC ID: 112989

Route: 33

County: Greene

Acceptance Program: [X] Quality Assurance [ ] Modified Acceptance Program

Type Material: Superpave SM-12.5A (50 gyration)

Job Mix ID: 7024-2019-32 Identifier:

Lot Number: 201901 Order:

No. Loads: 45

Total English Tons: 976.61

Reconciling the tonnage:

Calculated Tonnage from the Lot Testing – 819 tons

Shipped Tonnage from the TL-102s – 976 tons

What gives? Where did the 157 tons go?

Connections, crossovers, gore areas.. Double check your dimensions and lift thickness

Page 13 of 21 **Schedule:** PM-7B-19 Greene Co.

State Project Number: PM7B-967-F19, P401

Route:	33 (R-VA US00033EB)	**Milepost From:**	2.59		.4 W. Rt. 625		
Subdivision:		**Lane:**	B	**PCN:**	M719PMB112989	**UPC:**	112989
Traf Grp:	XIII	**Milepost To:**	5.15		.75 MI. E. Rt. 638		
From Intersection:	2.99 Miles: Goose Pond Rd; Rt. 625N/S (Greene County)						
From Offset:	-0.4MI	**From X/Y Coordinates:**			38.34347, -78.51075		
To Intersection:	5.09 Miles: Dunivan Ln; Powell Mountain Rd; Timber Dr; Ramp Intersection						
To Offset:	0.06MI	**To X/Y Coordinates:**			38.32168, -78.47661		
Public Comments:							

Item Code & Description	Detail	Len(mi)	Wid(ft)	Dep(in)	Gal/SqYd	Lbs/SqYd	Quantity	UOM
16350 - ASPHALT CONC. TY. SM-12.5A	Connections						92	TON
16350 - ASPHALT CONC. TY. SM-12.5A		2.56	26			230	4490.58	TON
16522 - FLEXIBLE PAVE.PLANING 0"-2"		2.56	26	2			39048.53	SY

Applying Price Adjustments on the total

Calculated Tonnage from the Lot Testing – 819 tons is subject to price adjustments, in this case a 5% bonus

- **Method A**
- **Method B and**
- **2016 Road and Bridge Specification**

While the 157 tons is paid for at the unit bid price

Method A and B Pay Tables

Method A Bonus Language

If a minimum of 80% of each lot's core/plug samples is no lower than 92.5% of TMD for Surface Mixes and 92.2% of TMD for Intermediate and Base Mixes and the lot average results in 100%

payment, then the Engineer will increase the unit bid price for AC mixture by five (5) percent.

TABLE III-4A
Payment Schedule for Method A Lot Densities

% TMD	% of Payment
Greater than 96.5	95
92.2[1]/92.5[2] – 96.5	100
90.0 – 92.1[1]/92.4[2]	90
88.0 – 89.9	80
Less than 88.0	75

[1]For Intermediate and Base Mixes, the minimum TMD percentage is 92.2 per Table III-3

[2]For Surface Mixes, the minimum TMD percentage is 92.5% per Table III-3

TABLE III-4B
Payment Schedule for Method B Lot Densities

% of Target Control Strip Density	% of Payment
Greater than 102.0	95
98.0 to 102.0	100
97.0 to less than 98.0	95
96.0 to less than 97.0	90
Less than 96.0	75

Problems that arise

Paved length – 8316’
Calculated Tonnage Reported as – 1064.86
but calculates to 1219.7

Testing only accounted for 7500’
We left 815 feet untested

TL-102 tonnage reported as 1064.86

TL-59A (1/2017)

Asphalt Concrete Density Acceptance Test Report - Method A
Acceptance by Plugs/Core

Production Date: -19
Project/Schedule Number:
County:
Total paved length (ft): 8316
Calculated tonnage: 1064.86
Asphalt Mix Type:
Route & Direction:
From (Station, MP): 2.27-
Application Width (ft): 12
QC Lot #:
Asphalt Producer:
Lane(s): Center
To (Station, MP): 4.16
Application Rate (lbs/sy: 220
Asphalt Plant:

Control Strip Information:
1. Control Strip Number and Date: 2 / 16-26-19
2. CS Density: 145.8 lbs/ft³
3. Minimum Longitudinal Joint Density: 138.5 lbs/ft³ (= 95% CS Density)
Nuclear Gauge Serial #: 1042

Acceptance Testing Results By Plugs/Cores
Daily Gmm: 2.489
Plant Lot & Sample #(s) for Gmm testing: Lot 3 Sample 3

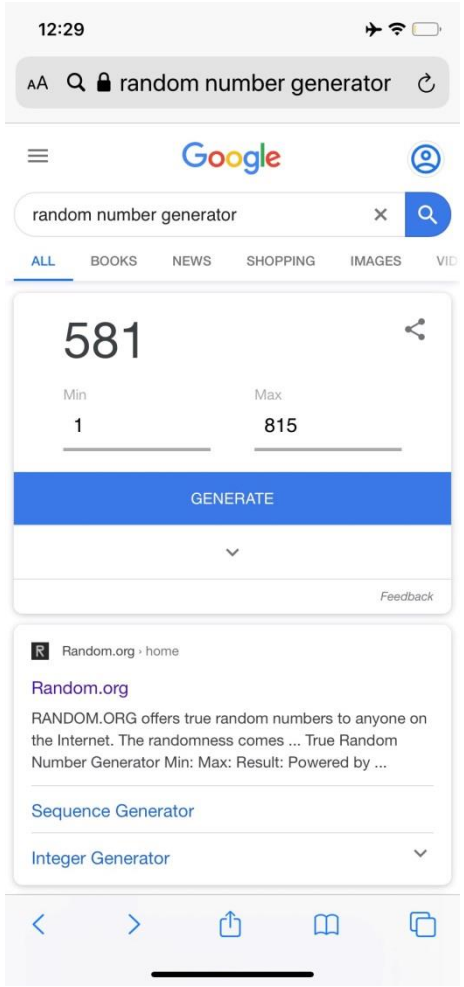
Sub lot	Distance	Offset	Weight in Air [A]	Weight in H2O [B]	SSD [C]
1	1156	4	1091.1	628.7	1092
2	1526	2	1068.5	620.4	1068
3	4499	2	939.6	538.4	940
4	4815	3	938.0	538.9	939
5	6375	9	894.3	514.3	896
6	8606	6			
7	10246	10			

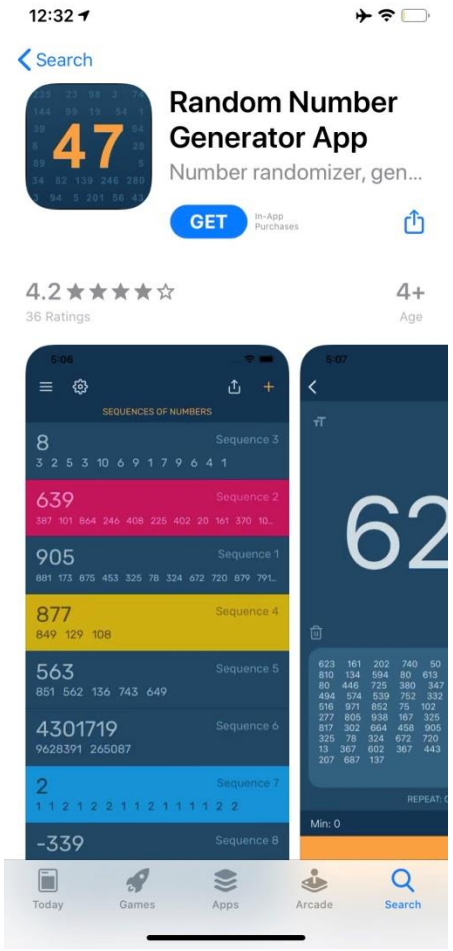
Lot Number: 201905

No. Loads: 43

Total English Tons: 1064.86

How to handle partial sub-lots at the end of the day





Sub lot	Distance	Offset	Weight in Air [A]	Weight in H2O [B]	SSD [C]
1	1156	4	1091.1	628.7	109
2	1526	2	1068.5	620.4	106
3	4499	2	939.6	538.4	940
4	4815	3	938.0	538.9	939
5	6375	9	894.3	514.3	896
6	8606	6			
7	10246	10			

Thank You and have a great and Safe paving season!